

### **Abstract of the Disclosure**

A motion estimator and an estimation method for a video encoder to reduce power consumption by reducing the computational complexity of the motion estimator. In an upper step, a full search for a  $\pm 4$  pixel search region for a  $4 \times 4$  pixel block is performed at 1/4 video resolution, to detect two motion vector candidates. In a medium step, a partial search for two vector candidates selected in the upper step and one vector candidate using a spatial correlation is performed for a  $8 \times 8$  block within a  $\pm 1$  or  $\pm 2$  search region, to decide one motion vector candidate. In a lower step, a partial search for the  $\pm 1$  or  $\pm 2$  search region on  $16 \times 16$  block is performed at full resolution, and a half pixel search for a motion vector candidate obtained in the lower step is performed to estimate a final motion vector. A  $\pm 4$  pixel search region is operatively divided into four search regions, and the estimator sequentially searches the four  $\pm 2$  pixel search regions to sequentially output SAD values.